

I CLAIM:

1. A method for detecting an implemented network topology with at least one master module and a plurality of slave modules levels said slave modules having at least two bi-directional connection interfaces, said modules being flexibly networked in a physical point-to-point connection in an arbitrary network topology module and each having a unique identification data item, comprising said at least one master module gradually requesting the identification data of each level of the slave modules connected to this master module by using said slave modules' connection interfaces to transmit messages containing information about which connection interface is to be used to forward the respective message, said information being altered upon forwarding of each message such that a description of a return path through the network is automatically set up, each identification data item explored being returned to the master module via this return path using the respective message.

2. The method according to claim 1, further comprising the steps of carrying out a constant check at each connection interface of each module to determine connection to another module and reciprocal interchange of the respective identification data; each master module sending a message to each module on a next highest level requesting that the connection interfaces configuration and associated identification data be returned, the respective message containing information about which connection interface the modules on the preceding level are to use to forward the messages; setting up automatically a description of the return path to the master module by virtue of each message being altered upon forwarding by the module on a preceding level by entering

into the respective message which connection interface was used to receive the message; and repeating the preceding steps recursively for each next highest level of modules until all the modules have been identified.

3. The method according to claim 1 or 2, wherein each slave module receives a request from a master module to return the message additionally returns a data item via the connection interface which is used to transport back the message, said additional data item not being altered when forwarded by other modules.

4. The method according to claim 1, wherein each identification data item comprises the module type and a unique serial number.

5. The method according to claim 1, wherein to alter a message when forwarded by the module on the preceding level, the respective message is only received in full and is only forwarded when the prescribed transmitting connection interface is free.

6. The method according to claim 1, wherein a different message type is used for messages sent by a master module than for messages which are to be received by a master module.

7. The method according to claim 1, wherein each message has a step counter for the maximum number of levels, which step counter is decremented for messages sent by a master module and is incremented for messages which are to be received by a master module, or vice versa.

8. The method according to claim 7, wherein the respective value of the step counter is used by a slave module to detect whether the desired level of slave modules has been reached.

9. The method according to claim 7 or 8, wherein the respective value of the step counter is used by a master module to detect whether a response message has been directed to said master module.

10. The method according to claim 1, wherein messages are used for detecting the network topology, while subsequent data interchange takes place between modules using subscriber addresses associated with the respective modules, with subscriber addresses being assigned during network detection to the detected module by a master module as part of a message.

11. A method for centrally starting up a numerically controlled industrial processing machine having a numerical controller as master module and a plurality of electrical drives as slave modules, the networking of the modules being detected by the master module in accordance with the method of claim 1.

12. The method according to claim 1, wherein modules have only one connection interface which can be used to receive and send messages which are located on a spurline end.

13. The use of the method according to claim 1 for exchanging arbitrary information between modules which are flexibly networked in an arbitrary

[illegible]